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09/806,346	12/06/2001	George Mermigidis		8557

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EXAMINER
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DIAMOND, ALAN D

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 11/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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# Office Action Summary

Application No.

09/806,346

Applicant(s)

MERMIGIDIS, GEORGE

Examiner

Alan Diamond

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☒ Claim(s) 3-10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☒ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_ 6) ☐ Other:

## **DETAILED ACTION**

### ***Priority***

1. An examination of this application reveals that applicant may be unfamiliar with patent prosecution procedure. While an inventor may prosecute the application, lack of skill in this field usually acts as a liability in affording the maximum protection for the invention disclosed. Applicant is advised to secure the services of a registered patent attorney or agent to prosecute the application, since the value of a patent is largely dependent upon skilled preparation and prosecution. The Office cannot aid in selecting an attorney or agent.

Applicant is advised of the availability of the publication "Attorneys and Agents Registered to Practice Before the U.S. Patent and Trademark Office." This publication is for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

### ***Priority***

2. The WIPO-stamped copy of German foreign priority document 19937910.6 is not in the instant file. The Examiner will try to obtain a copy of said WIPO-stamped German foreign priority document from WIPO.

### ***Specification***

3. The abstract of the disclosure is objected to because it should not contain any legal phraseology such as the word "said". At line 3 on the abstract page, the word "Said" should be changed to "The". Correction is required. See MPEP § 608.01(b).

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4. The disclosure is objected to because of the following informalities: On page 3, at line 30, the term "y-Butyrolactone" should be change to " $\gamma$ -butyrolactone". On page 6, between line 3 and 4, the heading "Brief Description of the Drawing" should be inserted. Appropriate correction is required.

### ***Claim Objections***

5. Claims 3-10 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only and cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, claims 3-10 have not been further treated on the merits.

6. Claims 1 and 2 are objected to because of the following informalities: At line 1 in each of claims 1 and 2, the term "Procedures" should be changed to "Procedure". In claim 1, at the end of step c), the word "and" should be inserted after "suspension;". At the last line of claim 1, a period should be inserted after "paste". In claim 2, at line 4, the term "y-Butyrolactone" should be change to " $\gamma$ -butyrolactone". In claim 2, at lines 5-6, the term "conductivity" should be changed to "conductive". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1 and 2 are rejected as failing to define the invention in the manner required by 35 U.S.C. 112, second paragraph. At the end of this section of the Office

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action, the Examiner has proposed claims 1 and 2 that overcome the 35 USC 112, second paragraph, rejections.

Claim 1 is indefinite because line 1 recites "electrolyte containing and/or carbon containing", but from steps a) and b), it appears that electrolyte and carbon are both required components of the claim. The same applies to dependent claim 2.

Claim 1 is indefinite because the language "in particular ..." at lines 2-3 sets forth a range within a range. The meets and bounds for the claim cannot be determined. The same applies to dependent claim 2.

Claim 1 is indefinite because, in step b), it is not clear exactly to what the carbon black, conductive carbon black, or graphite is added in the "adding" step. The same applies to dependent claim 2.

Step b) of claim 1 is indefinite because of multiple use of the term "and/or". It is not clear what is added during the "adding step. The same applies to dependent claim 2.

Claim 1 is indefinite because each occurrence of "e.g. with ..." at lines 6-8 sets forth a range within a range. The meets and bounds for the claim cannot be determined. The same applies to dependent claim 2.

Claim 1 is indefinite because, in step c), is not clear what happened to the conductive carbon black that is previously mentioned in step b). The same applies to dependent claim 2.

Claim 1 is indefinite because "the homogenized suspension" at the first line of step d) lacks positive antecedent support in claim 1 itself.

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In claim 2, at lines 2-3, it is not clear what is to be encompassed by the term "do exist in a concentration in each case, as it is used for an electrolyte in a photoelectrochemical cell".

In claim 2, at line 4, the language "preferentially ..." and "preferably ..." set forth a range within a range. The meets and bounds for the claim cannot be determined.

In claim 2, at each of lines 6 and 7, it is not clear what is meant by the term "resistance of max."

In claim 2, at line 6, the term "as well as" does not clearly point out what is intended.

Claim 2 is indefinite because "the received suspension" at lines 7-8 lacks positive antecedent support in claim 1.

In order to overcome the above 35 USC 112, second paragraph, rejections of claims 1 and 2 above, it is suggested that claims 1 and 2 be rewritten as follows:

1. Procedure for manufacturing a printable paste as electrode material for a photoelectrochemical cell, with the steps:
  - a) preparing a solvent containing electrolytic salts and/or an electrolytic auxiliary;
  - b) adding carbon black, conductive carbon black, and/or graphite to the solvent, so as to produce a suspension;
  - c) stirring the solvent containing the carbon black, conductive carbon black and/or graphite to produce a substantially homogeneous suspension; and
  - d) treating the substantially homogenized suspension with ultrasound to produce a thick, printable paste.

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2. Procedure according to claim 1, characterized by the fact that in the solvent, the electrolyte salts and the electrolyte auxiliary are each present in a concentration for use in a photoelectrochemical cell;  $\gamma$ -butyrolactone is used as the solvent, to which is added 10 weight % of carbon black with a large surface of  $20 \text{ m}^2/\text{g}$  or over and/or conductive carbon black with a maximum electrical resistance of  $10^{-4} \Omega$ , and 8 weight % of graphite with a maximum electrical resistance of  $10^{-4} \Omega$ ; and the suspension is stirred for 5 minutes and then treated for 15 minutes with ultrasound.

***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Sugawara et al, EP 917226 A2.

Sugawara et al prepares a printable paste for an electrode by preparing or obtaining a prepared alcoholic solution of polymer electrolyte; then mixing, with stirring, this solution with carbon powder that supports a platinum catalyst and with a fine carbon powder; and then making the resulting mixture into the form of a paste by use of an ultrasonic dispenser (see paragraphs 0028 and 0042). The recitation "for a photoelectrochemical cell" in the instant claim is merely intended use and is not deemed to be a positive limitation in the claim. Since Sugawara et al teaches the limitations of the instant claim, the reference is deemed to be anticipatory.

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***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawahara, EP 785588 A2.

Kawahara prepares a paste-like ink by preparing or obtaining a prepared electrolytic solution N; mixing this solution with catalyst-carrying carbon, alcoholic solvent, and camphor; and then applying ultrasonic waves so as to make the camphor completely dissolved into the solvent and the catalyst-carrying carbon homogeneously dispersed (see the paragraph bridging cols. 6 and 7; and col. 13, lines 40-54). The recitation "for a photoelectrochemical cell" in the instant claim is merely intended use and is not deemed to be a positive limitation in the claim. Kawahara et al teaches the limitations of the instant claim other than the difference which is discussed below.

Kawahara does not specifically teach that the "mixing" of the electrolytic solution, catalyst-carrying carbon, alcoholic solvent and camphor is done with stirring. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used stirring to mix Kawahara's electrolytic solution, catalyst-carrying carbon, alcoholic solvent and camphor since a skilled artisan would expect that stirring would work to form a mixture.

***Conclusion***



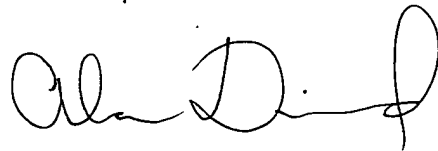
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13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 5,916,628 and DE 10141647 A1 are hereby made of record.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Diamond whose telephone number is 703-308-0840. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 703-308-3322. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

A handwritten signature in black ink, appearing to read 'Alan Diamond', with a stylized, flowing script.

Alan Diamond  
Primary Examiner  
Art Unit 1753

Alan Diamond  
November 5, 2003